

# Clemson IMPACTS

Clemson University Public Service Activities

Winter 2008



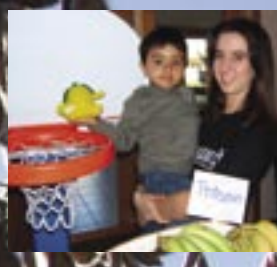
State plan becomes national model for bird flu response



Former mill village undergoes renaissance



Switchgrass could produce more ethanol than corn



Food and nutrition program reaches out to Hispanic community



Camp Long goes green



Packaging science and graphics merge to serve industry



## Letter from the Vice President

In this issue you'll find Clemson agriculture programs that include our bird flu response plan serving as a model for the nation, a nematode identification program building international cooperation, and research that is converting rotten peaches to hydrogen fuel.

Economic development efforts include spearheading a renaissance in the town of Glendale and leading a statewide initiative to improve the state's quality of life by advancing the status of women and girls.

Environmental research is exploring switchgrass as an alternative to corn for ethanol production because the native grass has an energy return ratio almost 10 times higher than corn. Because switchgrass is not used to feed either humans or livestock, its use as a fuel will not affect the availability or prices of food products.

Food and nutrition programs are helping Hispanic communities address health issues such as diabetes, cancer, and heart disease. One research effort identified the way that mercury enters the food chain through fish. Another found that forage-fed beef is twice as potent as grain-fed beef in a key cancer-fighting compound.

Youth programs include a 4-H beef leadership program, established in memory of a former leader in the beef cattle industry, and a new book co-authored by Clemson faculty to help parents and teachers recognize and address "cyberbullying" on the Internet and cell phones.

Sincerely,

John W. Kelly,

Vice President for Public Service and Agriculture

*Knowledge for living. Knowledge for life.*

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PUBLIC SERVICE

*Clemson Impacts*, a quarterly publication of Clemson Public Service Activities, is available to South Carolina residents upon request. *Clemson Impacts* is also available on the web [www.clemson.edu/public/](http://www.clemson.edu/public/)

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## State plan becomes national model for bird flu response

By Peter Kent

South Carolina's poultry industry is a key part of the state's agricultural economy. The industry accounts for \$1.5 billion in sales yearly and provides more than 7,500 jobs. Annual production includes more than 68 million dozen eggs, nearly 1.5 billion pounds of chicken and about 10 million turkeys.

A rapid response plan to control an outbreak of avian influenza is vital. The plan developed by Clemson poultry veterinarian Julie Helm for South Carolina producers has received national recognition by the American Veterinary Medicine Association. It is now promoted as a template for other states.

"The priority must be to protect the public and minimize loss to the industry," said Helm, a member of Clemson's Livestock and Poultry Health programs. "Education and practice exercises give us a chance to walk through response planning and reinforce lines of cooperation among agencies."

The program she developed, called the Avian Influenza Rapid Response Training, provides a thorough understanding of the various types of influenza. More than 48 state, federal and industry leaders attended the statewide training this fall to practice a coordinated response by animal and human health responders.

For more information: Julie Helm, 803-788-2260, [jhelm@clemson.edu](mailto:jhelm@clemson.edu) or [www.clemson.edu/LPH/npip.htm](http://www.clemson.edu/LPH/npip.htm).



Photo by Peter Kent

## Clemson researcher makes biofuel from rotten peaches

By Peter Kent

What's brewing in Caye Drapcho's bioreactor may well be a fuel of the future. Drapcho, a biosystems engineer, is investigating a bacterium that produces hydrogen. The microbe is called *Thermotoga neapolitana*. And it has a taste for peaches, especially rotten ones.

"Working with the South Carolina Peach Council, we have found that peaches not suited for consumer sale can be converted to a biofuel by this bacteria," said Drapcho. "Peach waste has substantial organic value with a high percentage of sugars that can be converted to hydrogen gas."

More than 200 million pounds of peaches are harvested annually in South Carolina, the nation's No. 2 peach producer behind California, and approximately 20 million pounds of damaged peaches are discarded. This research may help turn crop losses into fuel.

For more information: Caye Drapcho, 864-656-0378, [cdrapch@clemson.edu](mailto:cdrapch@clemson.edu).



Photo by Peter Kent

## Plant pest ID course cuts ag losses

By Peter Kent

Nematodes are microscopic worms that cause \$80 billion of crop loss in the world each year. All crops are damaged by at least one species of nematode. Accurate nematode identification is important in the management of turfgrass, field and fruit crops, and vegetables.

To help protect these crops, the Department of Entomology, Soils, and Plant Sciences conducts the Plant-parasitic Nematode Identification Course. Since the program began in 1982, more than 490 professionals from 40 states and 25 countries have received certification to identify potentially harmful species of nematodes.

Nematologist Paula Agudelo offers the course every December on the Clemson campus and is now expanding to Latin America and Canada. Training regulatory personnel helps minimize the parasite's spread and prevent nematodes from crossing national borders.

The program is part of a continuing effort to update skills and increase efficiency of professionals in plant pathology and nematology.

For more information: Paula Agudelo at 864-656-5741, [pagudel@clemson.edu](mailto:pagudel@clemson.edu), or [www.clemson.edu/esps/plantpath/nematology/nematode.htm](http://www.clemson.edu/esps/plantpath/nematology/nematode.htm).

## Farm and Ranch Expo highlights agriculture

By Diane Palmer

Pet owners, home owners, landscapers, farmers and ranchers gathered at the second annual SC Farm and Ranch Expo this fall to learn about new equipment, products and techniques.

"Agriculture is the second largest industry – second to tourism," said R.D. Morrison, coordinator of the event at Clemson's Garrison Livestock Arena. Clemson Extension and the Pickens County Cattlemen's Association sponsored the event.

Beef seminars focused on chute side management and herd health. Horse seminars included round-pen training and other management practices taught by horse trainer Mike McKenzie.

The event benefited the National Cattlemen's Foundation and American Quarter Horse Association Therapeutic Riding Program that helps children with physical and mental challenges.

"I want to thank the Pickens County Cattlemen's Association for what they're doing to highlight the importance of agriculture in our state," Gov. Mark Sanford said. "Their efforts to raise money for these charities are to be commended."

For more information: Clemson Extension, 864-878-1304, ext. 114, or R.D. Morrison, [rdm95573@bellsouth.net](mailto:rdm95573@bellsouth.net).



Photo by Peter Kent

## Clemson horses compete in World Championship Show

By Peter Kent

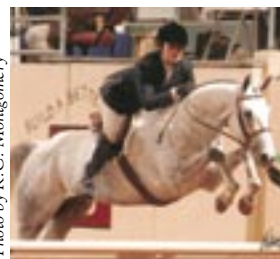


Photo by K.C. Montgomery

In South Carolina, more than 40,000 people own more than 100,000 horses. That's as many horses per capita as Texas, and still growing. Clemson's Equine Center supports the industry through research, teaching and Extension programs, using a herd of about 100 horses.

In the fall, three Clemson-bred horses were invited to compete for the first time at the American Quarter Horse Association World Championship Show in Oklahoma City. Competitors came from 48 states and six countries but Clemson horses were the only ones bred and owned by a university.

"It was terrific for our team members to interact with so many world-class competitors and trainers," said Kari Tankersley, equine center manager. The center's breeding program produces horses that are ideally suited for teaching students in equine management and pre-veterinary programs.

The center also serves as a research laboratory. "Chris Mortensen is studying the impact of stress on mare fertility," said Tankersley. "In the past, Clemson researchers have helped develop medications that increased the chances that mares would deliver healthy foals."

For more information: Kari Tankersley 864-646-3554, e-mail [ka@clemson.edu](mailto:ka@clemson.edu).

## Tri-county cattlemen increase sales and profits

By Tom Lollis

Beef producers in Chester, York and Lancaster counties celebrated their 30th year marketing feeder calves with the Tri-County Cattlemen's Association.

Allen Beer has been a member since the association began in 1977. He credits the late Robert Vaughn, Clemson Extension livestock agent at the time, with helping area cattlemen change their focus from production to marketing.

"We got a good price and went on from there," he said of the initial sale. "Now we do whatever is needed to produce healthy cattle – preconditioning, vaccinating and now electronic identification (EID) tags."

Preconditioning allows producers to sell calves that are 90-100 pounds heavier than if they were sold as weanlings, according to Brian Beer, Extension livestock agent and Allen Beer's son. "Truck-load lots usually bring 4-8 cents per pound more than cattle sold one at a time," he said. This fall 27 tri-county producers consigned 1,472 calves – 21 loads – to the annual sale.

For more information: Brian Beer, 803-283-3302, ext. 115, [bbeer@clemson.edu](mailto:bbeer@clemson.edu).



Miniature Scottish Highlander Bull, O.C. and Louella Cobb of Honea Path, Egypt Bottom Farm.

Photo by Diane Palmer



# Former mill village undergoes renaissance

By Debbie Dalhouse

The one-time mill village of Glendale in Spartanburg County is experiencing a renaissance through the SC Design Arts Partnership.

A series of community visioning exercises, called charettes, led to formation of a new Glendale Outdoor Leadership School, restoration of the former mill office as headquarters for a new environmental studies program for kindergarten through college students, planning for a five-mile "blueway" along Lawson's Fork Creek and the Pacolet River, and development of a half-mile "greenway" with hiking trails.

"The design charettes demonstrated not what is, but what can be," said B.G. Stephens, a Glendale community leader who participated in the partnership's SC Mayors Institute for Community Design.

The strength of the partnership lies in building community collaborations. The latest charette was conducted by the American Institute of Architects and facilitated by Bob Bainbridge, a Clemson University planning expert. The Mary Black Foundation is funding Outdoor Leadership School programs; Wofford College is leading the environmental studies program; and the Palmetto Conservation Foundation is developing the greenway.

The SC Design Arts Partnership is directed by the Clemson Institute for Economic and Community Development in collaboration with the SC Arts Commission and Clemson's College of Architecture, Arts, and Humanities.

For more information: Lindsey Moore, 803-734-8622, [lmoore@arts.sc.gov](mailto:lmoore@arts.sc.gov) or [www.southcarolinaarts.com/design/](http://www.southcarolinaarts.com/design/).



Photo by Lindsey Moore

## Women's Connection mobilizes statewide effort

By Debbie Dalhouse

South Carolina ranks 50th in the nation for women elected to state office, 48th for women's life expectancy, 39th for women earning college degrees, and first for women killed by domestic partners.

To improve these statistics, the Clemson Institute for Economic and Community Development initiated the SC Women's Connection, a statewide organization to improve economic opportunity and quality of life by advancing the status of women through research, teaching, and service programs.

The inaugural meeting in October was chaired by First Lady Jenny Sanford in Florence. Since then more than 1,500 women have been educated on the status of women in the state. The initiative is directed by community development agents Jennifer Boyles and Beth Stedman. The next statewide meeting is April 9 in Columbia, featuring former US Congresswoman Elizabeth J. Patterson.

For more information: [www.scwomensconnection.com](http://www.scwomensconnection.com), Jennifer Boyles, 843-616-0786, [jbyls@clemson.edu](mailto:jbyls@clemson.edu), or Beth Stedman, 843-430-4800, [bstedma@clemson.edu](mailto:bstedma@clemson.edu).

## Survey reveals issues important to state citizens

By Peter Kent

South Carolinians identified education, the economy and health care as the most important issues facing our state in the fall survey conducted by Clemson's Jim Self Center on the Future and the USC Institute for Public Service and Policy Research.

"Self Portrait: How Are We Doing in South Carolina?" is a twice-yearly telephone survey to promote awareness of the issues facing the state, said Donna London, director of the Jim Self Center. More than 820 citizens, age 18 and older, participated in the survey.

Approximately 56% were confident in the next generation's ability to compete in the global economy. It is notable that people in the lower education and income levels and in the youngest age group (18-29) were the most optimistic. This information can help public officials and opinion leaders make informed decisions for state policies and community actions.

For more information: Donna London, 864-656-4700, [dlondon@strom.clemson.edu](mailto:dlondon@strom.clemson.edu) or <http://selfcenter.clemson.edu/>.





Photo by Peter Kent

## Plant regulators test response plan for invasive weed

By Peter Kent

Farmers in the Southeast are facing a fast-spreading weed called tropical spiderwort, *Commelina benghalensis*, also known as Benghal dayflower. This native of Africa and south Asia is currently the most troublesome weed in Georgia cotton, with annual control costs exceeding \$1.2 million. It competes for water and nutrients, and its sprawling dense growth can smother crops.

To control the plant before it becomes a serious problem in South Carolina, Clemson's Department of Plant Industry tested its plan to identify and eradicate the noxious weed. During a three-day exercise at the Edisto Research and Education Center in Blackville, plant industry teams checked fields in several counties near Georgia. While no plants were found, the event provided practice and feedback for improvement.

"The tropical spiderwort has recently moved beyond cotton," said David Howle, Regulatory Services assistant director. "In 2005, it was found in container ornamentals shipped from North Carolina. Tropical spiderwort is on the Federal Noxious Weed List, meaning it's prohibited from being sent across state lines. Stopping further spread of this weed is vital to keeping down costs to control it."

For more information: Christel Harden, 864-646-2135, [charden@clemson.edu](mailto:charden@clemson.edu).



Photo by Peter Kent

Clemson turf scientist Haibo Liu and president Jim Barker with Cliffs president Jim Anthony and golf maintenance VP Daniel Brazinski.

## The Cliffs signs partnership for turf research

By Peter Kent

There are some 400 golf courses in South Carolina, ranking it as the second most popular golf vacation destination behind Florida. Clemson turfgrass scientists conduct research to support this \$1.5 billion state industry and assist sod producers and homeowners.

Now The Cliffs Communities is funding a turf research project to develop environmentally sustainable management practices for golf courses. The Cliffs Center for Environmental Golf Research, near Travelers Rest, is a 5.6-acre site that includes research laboratories; two experimental par-three organic greens with both warm- and cool-season grasses; and 40,000 square feet of turfgrass research plots.

Turf scientist Haibo Liu, the project director and his graduate students will work with golf course superintendents to find alternative management practices that protect the environment and provide a quality golf experience. Clemson turf research is also conducted on the main campus, the Pee Dee Research and Education Center near Florence, and on commercial courses.

"Clemson turf research is used nationwide," said Ted Whitwell, horticulture chair. "Our Professional Turfgrass Pest Management Guide is a model used by surrounding states, and Clemson faculty recently authored six textbooks on turfgrass management."

For more information: Haibo Liu, 864-656-6367, [haibol@clemson.edu](mailto:haibol@clemson.edu).



## Baruch facility wins regional energy award

State Senator Yancey McGill, left, reviews plans for a new conference and education facility at the Baruch Institute of Coastal Ecology and Forest Science in Georgetown with institute director George Askew, right. The 12,000-square-foot facility won a regional award for its ultra-efficient heating, ventilation and cooling system designed by RMF Engineering of Mount Pleasant. The building, scheduled for completion in summer 2008, will support coastal environmental research. It will minimize environmental impact by reducing water and power usage, and by using recycled materials. For more information: [www.clemson.edu/baruch/](http://www.clemson.edu/baruch/).



## Switchgrass could produce more ethanol than corn

By Peter Kent

Instead of corn, switchgrass could become the source for ethanol fuel produced in South Carolina. Switchgrass can produce as much as 800 to 1,000 gallons of ethanol per acre, compared to 416 gallons for corn. Even more striking, the energy return ratio could be as high as 10 for switchgrass, compared with 0.81 for gasoline and 1.36 for corn-based ethanol.

The SC Bioenergy Research Collaborative has been formed to demonstrate the economic feasibility of using plants, such as switchgrass, trees and sorghum, to make ethanol. The collaborative includes scientists at Clemson, the Savannah River National Laboratory, SC State University

and industry incubator SC Bio, as well as industrial partners who are committed to building a biofuels research pilot plant in the state.

A group of Clemson and USDA-ARS scientists, led by agronomist Jim Frederick, is investigating switchgrass production systems at the Pee Dee Research and Education Center in Florence, including soil and crop management, new variety development and measuring environmental impacts.

For more information: Jim Frederick, 843-662-3526, [jfrdrck@clemson.edu](mailto:jfrdrck@clemson.edu) or <http://agroecology.clemson.edu/switchgrass/sg.htm>.

## “Silvopasture” combines timber, pasture and cattle

By Tom Lollis

Forest landowners who own cattle are learning how to combine livestock, forages and timber into one production system, called silvopasture.

Beth Richardson, Clemson extension agent for forestry and wildlife, conducted a seminar this fall at the Edisto Research & Education Center in Blackville. Participants learned about the system practiced in South Alabama, where a breed called pineywood cattle have grazed in the forest for centuries.

“The cattle are feral stock descended from animals introduced by Spanish explorers, and they learned to fend for themselves in the longleaf pine forests and



swamps of the Southeast,” she said. They tolerate heat, resist parasites and diseases, help control competition in the forest and provide an alternative income source.

For more information: Beth Richardson, 803-534-6280, [mrchrds@clemson.edu](mailto:mrchrds@clemson.edu).

## Predator beetle attacks woolly adelgid in Appalachian hemlocks

By Peter Kent

A bug smaller than a sesame seed is killing off hemlocks in the southern Appalachian Mountains. The hemlock woolly adelgid sucks fluid from the base of hemlock needles, causing them to drop off and the branches to die.

Experts point to climate change. The drought has weakened the trees, and milder winters have allowed the invasive pest to spread as much as 20 miles per year. Losing hemlocks would be an ecological tragedy. Their shade protects rivers and streams, providing the cool water needed by mountain trout.

The adelgid has no natural enemies here; but Clemson is one of a handful of research centers raising predatory beetles from Asia and the Pacific Northwest. Since 2002, nearly 750,000 beetles have been released in North and South Carolina and Georgia.

The effort, led by entomologist Joe Culin, is supported by the Jackson-Macon Conservation Alliance, Chattooga Conservancy, National Forest Foundation and several South Carolina and federal agencies.

For more information: Joe Culin, 864-656-5041, [jculin@clemson.edu](mailto:jculin@clemson.edu).





### Food and nutrition program reaches out to Hispanic community

By Diane Palmer

In the last 10 years, South Carolina's Hispanic population increased 211%, the fourth highest increase in the nation. Clemson scientists are seeking to help the group address nutrition-related health concerns.

"Obesity and related diseases – such as diabetes, hypertension, cancer and heart disease – occur at higher rates with this population," said Katherine Cason, state coordinator for Clemson's Expanded Food and Nutrition Education Program (EFNEP).

Cason and post-doctoral fellow Sergio Nieto-Montenegro are leading a research and outreach team in food science and human nutrition and public health sciences. Their research found that many Hispanic families have limited time, money or skills to purchase and prepare nutritious food.

The team formed partnerships with Hispanic communities across the state to develop and deliver educational programs with culturally appropriate information through radio, newspaper and health fairs. Their goal is to help children, youth and families improve both their diet and their health.

For more information: Katherine Cason, (864) 656-0539, [kcason@clemson.edu](mailto:kcason@clemson.edu)

### Forage-fed cattle benefits nutrition and farm revenue

By Peter Kent

Cattlemen in South Carolina and the rest of the region can capture some of the market from Midwest feedlot beef producers by raising cattle on grass. Two Clemson scientists are on a multi-state team studying how to raise grass-fed beef that is more profitable for producers and more healthful for consumers.

John Andrae studies pasture and grassland management while Susan Duckett analyzes meat quality and nutrition content.

Their research has found that forage-fed beef contains twice the amount of a potent cancer fighting compound called conjugated linoleic acid. In addition, grass- or forage-fed beef is leaner than grain-fed beef and contains greater concentrations of desirable fatty acids and antioxidants.

"This research is helping cattlemen meet consumer demand for more nutritious beef and turn a profit," said Andrae.

For more information: John Andrae, 864-656-3504, [jandrae@clemson.edu](mailto:jandrae@clemson.edu), and Susan Duckett, 864-656-5151, [sducket@clemson.edu](mailto:sducket@clemson.edu).



Photo by Sergio Nieto-Montenegro

### Mercury research helps identify link between environment and food

By Peter Kent

The mercury content in fish can cause neurological damage in humans. It accumulates in the food chain so that the concentration in predatory fish, such as bass, can be a million times higher than in the water. When humans eat these fish, we consume all the accumulated mercury.

Research by a Clemson scientist has provided a key insight into how mercury moves from the environment to the food chain. Yuji Arai, a molecular environmental toxicologist, collaborated with researchers from the U.S. Geological Survey and the University of Saskatchewan to study bass species in two California and Nevada reservoirs.

They identified a compound – formed by methyl mercury and an amino acid called cysteine – in fish from both reservoirs. The discovery is important for environmental policymakers who regulate commercial fishing and food safety guidelines.

Mercury in the reservoirs was the result of gold and silver mining in the 1800s. Today it enters our water supply as ash from burning coal or other fossil fuels, as well as from volcanoes and forest fires.

For more information: Yuji Arai, 864-656-2607, [yarai@clemson.edu](mailto:yarai@clemson.edu).



Illustration by Walker Massey



Photo by Peter Kent



## Former 4-H member endows beef leadership program

By Diane Palmer

A former 4-H member from Westminster has donated \$100,000 to Clemson University to help establish a 4-H leadership camp focused on beef cattle.

Pauline Thrift gave the money in memory of her late husband to create the Wayne G. Thrift 4-H Beef Leadership Memorial Endowment. This is the largest private gift ever given for South Carolina 4-H animal and beef projects.

"Wayne had a passion for beef cattle and the cattle industry," Mrs. Thrift said. "He also

loved young people and enjoyed introducing them to his cattle business. We hope this endowment will recognize young men and women who model Wayne's willingness to work hard and that it will help develop the future beef industry leaders in our state."

For more information:

[www.clemson.edu/4h/](http://www.clemson.edu/4h/) or Daniel Bozard, (864) 656-2742, [dbozard@clemson.edu](mailto:dbozard@clemson.edu).



Photo courtesy of Thrift family

## Camp Long goes green

By Pam Bryant

An energy work day at the W.W. Long Leadership Center took steps to conserve energy and cut operating costs. After an audit by the SC Energy Office, teams from Clemson University, the Aiken Electric Cooperative and the Energy Office began work in October.

The first step was to replace 625 light bulbs with energy-saving compact fluorescents, which are estimated to save \$7,400 per year. Future projects may include re-mapping security lighting, installing a solar water heater, and restoring a grist mill to generate hydro-electricity.

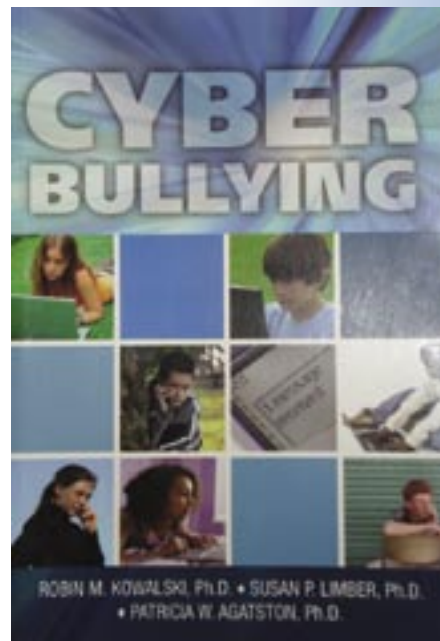
"We're committed to helping our members, our community and our environment," said Gary Stooksbury, CEO of Aiken Electric Cooperative, the utility provider for the camp. The company donated the new light bulbs and installed pads to elevate outdoor HVAC units.

Camp Long is a residential facility that serves at-risk youth through partnerships with the SC Department of Juvenile Justice, the SC National Guard and Aiken County Public Schools. Programs are delivered by Clemson's Youth Learning Institute to foster education through hands-on, nature-based, experiential learning.

For more information: [www.clemson.edu/yli/long/](http://www.clemson.edu/yli/long/).



Photos by Muriel Carter



## Book helps parents and educators prevent cyber bullying

By Kerry Coffey

A comprehensive book to address the threat of "cyber bullying" was released this fall, co-authored by Clemson professors and a consultant. Cyber bullying, also known as electronic bullying or social cruelty, can occur through email, instant messaging, in a chat room, on a social website or gaming site, and through digital messages or images sent to a cellular phone.

Titled "Cyber Bullying: Bullying in the Digital Age," the book covers three major areas: laws and policies, the role of parents in monitoring Internet access, and the role of educators in prevention and intervention. Authors are Susan Limber, professor in the Institute on Family and Neighborhood Life; Robin Kowalski, psychology professor; and consultant Patricia Agatston.

"Probably the most effective way to prevent and address cyber bullying is to make sure that parents and educators have an ongoing dialogue with children about it, including expectations for online behavior and what to do if you are cyber bullied or witness someone else being cyber bullied," said Limber.

For more information: [www.clemson.edu/ifnl/](http://www.clemson.edu/ifnl/) or [www.cyberbullyhelp.com](http://www.cyberbullyhelp.com).

## Agrosecurity conference to protect nation's meat supply

Some 130 first responders to livestock health emergencies came to Clemson in January for the Southern regional conference on protecting the nation's meat, milk and poultry supply from disease threats. The three-day meeting, co-hosted by Clemson and NC State, was designed to help Extension professionals define their roles – and the roles of veterinarians, livestock producers and other first responders – before, during and after an animal disease incident. State Extension responsibilities include educating livestock producers during all phases of emergency or disaster management, developing an animal response team, and building partnerships within and across states.

For more information: Howard Van Dijk, 803-865-1216, [hdijk@clemson.edu](mailto:hdijk@clemson.edu) or [www.eden.lsu.edu](http://www.eden.lsu.edu).



Photo by Peter Kent

## Roper Mountain science programs include agriculture

By Peter Kent

Through a partnership with the Roper Mountain science educators, Clemson Extension agents are providing Greenville-area students with



programs on the environment and ecology. Other partners include Master Gardeners, the Piedmont Beekeepers Association and the Greenville Forestry and Wildlife Society.

“Our work with Roper Mountain is part of our mission to educate the public and students about the role the life sciences and agriculture play in our lives everyday,” said Danny Howard, Greenville Extension agent.

Part of the Greenville school system, the Roper Mountain center serves five or six classes daily. “The involvement and advice Clemson Extension and the other groups provide help make the programs effective and memorable,” said Tim Taylor, science curator.

For more information: Danny Howard, 864-546-6421, [dhoward@clemson.edu](mailto:dhoward@clemson.edu).

## Plant compounds can enhance insect pest controls

By Tom Lollis

Faculty member at Cairo University, Said El-Salamouny, is conducting research at the Coastal Research & Education Center through the Fulbright program sponsored by the US State Department.

In partnership with Clemson entomologist Merle Shepard, he is investigating plant-derived materials that

can increase the efficacy of microbial agents, such as viruses, to control insect pests. They have found that teas and other plant compounds can protect the microbial agents from breaking down when exposed to sunlight.

For more information: Merle Shepard, 843-402-5393, [mshprd@clemson.edu](mailto:mshprd@clemson.edu).



Photo by Merle Shepard

## Peace Corps service can lead to master's degree

By Ross Norton

The Peace Corps Master's International Program combines one year of intensive on-campus study with 27 months in related service for the Peace Corps. Clemson students can earn a master's degree in agricultural education, applied economics and statistics, or forestry resources through the program.

“We are pleased to begin our partnership with Clemson University, a university with a proud tradition of volunteerism,” said Peace Corps Director Ron Tschetter.



Clemson program director William Molnar said, “Our Master's International Program is a cornerstone graduate program that will enhance our connections and reputation in the international arena. This program gives internationally minded students the academic and practical experience to meet the global challenges of today and tomorrow.”

For more information: William Molnar, 803-788-5700, [wmolnar@clemson.edu](mailto:wmolnar@clemson.edu), [www.grad.clemson.edu/](http://www.grad.clemson.edu/) or [www.peacecorps.gov/masters/](http://www.peacecorps.gov/masters/).



Photos courtesy of Peace Corps





## Packaging science and graphics merge to serve industry

By Peter Kent

A move to enhance the strengths of packaging science and graphic communications is setting the stage for Clemson to provide global leadership in packaging and graphics innovation. The Sonoco Institute of Packaging Design and Graphics brings together teaching, research and industry partnerships in the two disciplines.

The program will be housed in a new 28,000-square-foot facility, named the Harris A. Smith Packaging Science Building for the former chief executive officer of Smith Container Corp. in Atlanta.

Scheduled for completion by spring 2009, the building will include three main laboratories: a state-of-the-art computer-aided design lab; a package prototyping laboratory capable of developing a multitude of packages from paperboard, corrugated board, plastics and other materials; and an advanced printing technology laboratory.

"Our goal is to merge the industry's current needs with what is needed for the future," said Institute director Chip Tonkin. One area for future product development may be printed electronics, a market projected to be \$200 billion in the next 20 years.

For more information: Chip Tonkin, 864-656-5686, [tonkin@clemson.edu](mailto:tonkin@clemson.edu).

## Chapin receives highest Extension award

By Diane Palmer

Entomologist Jay W. Chapin received the Alumni Distinguished Cooperative Extension Public Service Award, the highest award given to a Clemson Extension professional. He was honored for his outstanding service to the small grain and peanut growers of South Carolina.

A faculty member since 1979, Chapin began his career as an Extension specialist at the Edisto Research and Education Center in Blackville. His expertise includes a variety of crops in addition to small grains and peanuts. He developed active programs for insect management, agronomic production and disease management. Some of his management programs are now the standard across the Southeast and his peanut production research is nationally recognized.

For more information: Jay Chapin, 803-284-3343, ext. 226, [jchapin@clemson.edu](mailto:jchapin@clemson.edu).



Photo by Clemson University



Photo by Tim Davis

## Master Gardeners grow funds for scholarship program

By Diane Palmer

The Aiken County Master Gardener Association has established a scholarship endowment for Clemson horticulture students. In December, they presented a \$9,000 check to complete a pledge of \$25,000.

They raised the funds through annual sales of plants and gardening almanacs and their Rent-A-Master Gardener program, which helps Aiken County homeowners solve gardening and lawn care problems in exchange for a donation.

"The endowment is four years ahead of schedule due to the success of the group's projects," said Suzanne Holmes, Clemson Extension agent who directs the Aiken County master gardeners. Master Gardener is a volunteer training program that provides 40 hours of intensive horticulture information.

For more information: Suzanne Holmes, 803-649-6297 ext 116, [sholme@clemson.edu](mailto:sholme@clemson.edu).

## Porter earns regional Extension award

By Alex Hill

Nancy Porter, professor and extension family resource management specialist, received the 2007 Southern Regional Excellence in Extension Award from the National Association of State Universities and Land-Grant Colleges. The award honors a career dedicated to excellence in extension programming.

Her most recent contribution is developing the prototype for the national program "Financial Security for All", which launches in February on the website [www.eXtension.org](http://www.eXtension.org). This program helps individuals in all income levels manage their finances more effectively.

For more information: Nancy Porter, 864-656-5718, [nporter@clemson.edu](mailto:nporter@clemson.edu).



# Horse trails book teaches ecologically sound principles

By Debbie Dalhouse

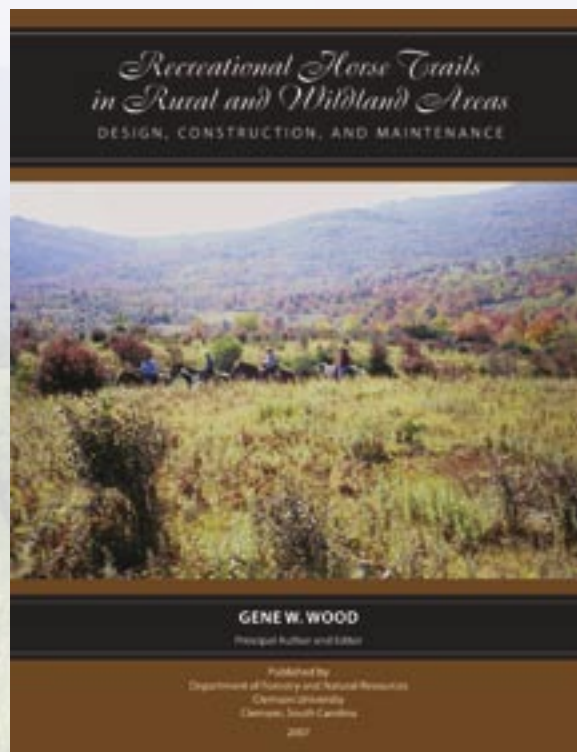
Horse trail designers now have a new resource, *Recreational Horse Trails in Rural and Wildland Areas*, principally written and edited by Gene Wood, professor emeritus. The 256-page book includes contributions from 16 authors around the nation, as well as from Wood, a nationally recognized expert on the topic.

Wood began trails work on the Clemson Experimental Forest in the mid-1990s out of a love of trail riding and in an effort to learn to design, construct, and maintain recreational horse trails that were safe, ecologically sound, and economically sustainable.

Produced in cooperation with the Federal Highway Administration's Recreational Trails Program and the American Horse Council, the book's 14 chapters plus appendices cover fundamental ecosystem considerations, trail design principles, trail construction and maintenance, and trailhead and campground designs, as well as management issues confronting land managers in five different ecosystems. Proceeds from book sales will support trail research and management programs at Clemson.

To order: [www.clemson.edu/forestres/](http://www.clemson.edu/forestres/).

For more information: Gene Wood, 864-650-1742, [gwood@clemson.edu](mailto:gwood@clemson.edu).



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